(11) **EP 1 164 599 A2** 

(12)

## **EUROPEAN PATENT APPLICATION**

(43) Date of publication: 19.12.2001 Bulletin 2001/51

(51), Int Cl.7: H01F 1/057

(21) Application number: 01305131.3

(22) Date of filing: 13.06.2001

(84) Designated Contracting States:

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU

MC NL PT SE TR

Designated Extension States:

AL LT LV MK RO SI

(30) Priority: 13.06.2000 JP 2000176595

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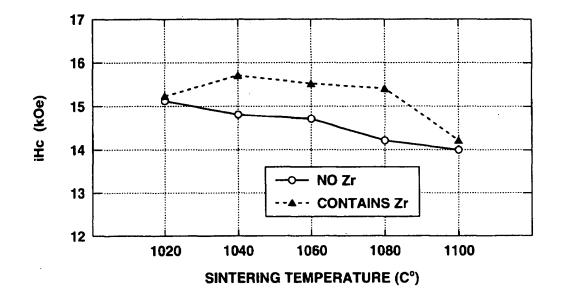
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## (54) R-Fe-B base permanent magnet materials

(57) A R-Fe-B base permanent magnet material is composed of a R-Fe-B magnet alloy which contains 87.5-97.5 vol% of a Fe<sub>14</sub>R<sub>2</sub>B<sub>1</sub> primary phase and 0.1-3 vol% of a rare earth oxide or a rare earth and transition metal oxide. The alloy contains as a major component in its metal structure a compound selected from among zirconium-boron compounds, niobium-boron com-

pounds and hafnium-boron compounds. The compound has an average grain size of at most 5  $\mu$ m and is uniformly distributed within the alloy such that the maximum interval between neighboring grains of the compound is at most 50  $\mu$ m. Rare-earth permanent magnet materials of this composition and structure have excellent magnetic properties.

## FIG.2



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